

WHAT IS CLAIMED IS:

1. An electricity meter electrical circuit comprising:
 - a. a plurality of gain stages for amplifying an input signal that is proportional to electricity usage to create a plurality of amplified electricity usage signals;
 - b. an A/D converter for converting the plurality of amplified electricity usage signals into a block of digital samples for each of the plurality of amplified electricity usage signals; and
 - c. a comparison circuit to determine which block of digital samples most accurately represents the input signal.
2. The circuit of claim 1 wherein the comparison circuit selects the block of sampled data that has the highest gain stage that is not saturated.
3. The circuit of claim 1 wherein the plurality of gains stages comprise a first and second gain stage, wherein the first stage amplifies the signal times two, and the second amplifies the output of the first stage times 4.
4. The circuit of claim 1 wherein the plurality of gains stages comprise a first and second gain stage, wherein the first stage amplifies the signal times two, and the second amplifies the output of the first stage times 8.
5. The circuit of claim 1 further comprising a voltage bias circuit to lift the input signal voltage into a positive varying input.

6. An electricity meter electrical circuit comprising:
 - a. a micro-processor/micro-controller;
 - b. a plurality of gain stages for amplifying an input current signal that is proportional to electricity usage to create a plurality of amplified electricity usage signals;
 - c. an A/D converter for converting the plurality of amplified electricity usage signals into a block of digital samples for each of the plurality of amplified electricity usage signals; and
 - d. a comparison circuit in the micro-processor/micro-controller to determine which block of digital samples most accurately represents the input signal.
7. The circuit of claim 6 wherein the comparison circuit selects the block of sampled data that has the highest gain stage that is not saturated.
8. The circuit of claim 6 wherein the plurality of gains stages comprise a first and second gain stage, wherein the first stage amplifies the signal times two, and the second amplifies the output of the first stage times 4.
9. The circuit of claim 6 wherein the plurality of gains stages comprise a first and second gain stage, wherein the first stage amplifies the signal times two, and the second amplifies the output of the first stage times 8.
10. The circuit of claim 6 further comprising a voltage bias circuit to lift the input signal voltage into a positive varying input.

11. A method for measuring electricity comprising the following steps:

- a. amplifying an input signal that is proportional to electricity usage to create a plurality of amplified electricity usage signals;
- b. converting the plurality of amplified electricity usage signals into a block of digital samples for each of the plurality of amplified electricity usage signals;
and
- c. comparing the plurality of blocks of digital samples to determine which block most accurately represents the input signal.

12. The method of claim 11 wherein the comparison step selects the block of sampled data that has the highest gain block of digital samples that is not saturated